REMARKS

Claims 3, 5, 7, 9, 11, 13, 14, 16 and 19 have been canceled.

Claims 1, 2, 8, 10, 12, 15, 17 and 18 have been amended.

Claims 4 and 6 remain as originally submitted.

Claim 20 has been added.

Claims 12, 15-17 and 19 were objected to because they include reference characters which are not enclosed within parenthesis.

Claims 16 and 19 have been canceled and the reference characters in claims 12, 15 and 17 have been amended to include the reference characters in parenthesis.

Claim 15 was objected to because the included reference character C12 does not appear in Figure 2B with respect to the DC to AC inverter circuit.

Claim 15 has been corrected by replacing reference character C12 with C4. This amendment now corresponds to Figure 2B and to the specification on page 8, lines 11-20.

Claims 1, 2, 4-10 and 15-19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bank et al (US Patent 6,628,791 in view of Turner et al (US patent 3,992,585).

Claims 5, 7, 9 have been canceled and claims 1, 2, 4, 6, 8 and 10 are respectfully traversed.

The Bank et al patent discloses a signal derived bias supply for electrostatic loudspeakers. The operating bias voltage in the Bank et al patent is derived from the secondary side of an audio step-up transformer. The bias voltage derived from the secondary side of the step-up transformer will not function, as required by the Applicant's design, because the bias voltage will tend to fluctuate with the varying levels produced by the incoming audio signal. Additionally, the diodes used in Banks for regulating the bias voltage have sufficient leakage currents to cause the bias voltage to rapidly decay during low-level audio conditions. Also, it is difficult to provide sufficient storage on the secondary side to buffer the bias voltage during low signal level conditions.

In contrast, the applicant's bias circuit operates directly from the audio amplifier (30) as shown in Figure 2A and on page 7, lines 21-29 (the word "directly" has been added to line 24 to further enhance the importance of having the bias voltage derived directly from the audio amplifier 30).

Additionally, the applicant's bias circuit buffers the input current sufficiently so that low-level input conditions will not cause the bias voltage to fluctuate. In summary, the main difference between the applicants and the Bank design is that the applicant's circuit operates with a low voltage audio amplifier, wherein Bank operates on the high-voltage side of a audio step-up transformer.

The Turner et al patent discloses a self-energizing electrostatic loudspeaker system that utilizes a bias voltage power supply for the drivers 1-4 (see figure) that includes a charging circuit shown by the dashed lines in the figure. The charging circuit which utilizes a battery, is replaced by the applicant by a custom, non-battery, linear regulator which requires less voltage to operate. Thus, the applicant is able to change the inverter from a 5-volt to a 3-volt unit which permits a much lower speaker operation.

The Turner et al patent, in their charging circuit 15, utilizes a 150-watt, 115-125 incandescent lamp 20 for current limiting and a zener diode 25 for voltage clamping. In contrast, the applicant does not clamp the voltage but instead uses the adjustable regulator circuit 14 which functions as a valve to meter current flow as required. Also, the electronic switching circuit which includes transistor 56 and the detector transistor 54 used in Turner et al is not required since the applicant's bias circuit is always on.

The Vosteen U.S. patent No. 4,050,028 discloses a direct current powered high-voltage amplifier, not an audio amplifier powered bias circuit as claimed by the applicant. The above arguments are deemed to also be applicable to the Vosteen patent.

Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Bank as modified in view of Turner et al.

Claim 3 has been canceled.

Claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over Bank as modified and as applied to claim 10 in further view of Turner et al.

Claim 11 has been canceled.

Claims 12-14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bank as modified and applied to claim 10, in further view of Quick (US patent 4,447,783.

Claims 13 and 14 have been canceled and claim 12 is respectfully traversed.

The above arguments are applicable to the Quick patent as they relate to claim 12, wherein potentiometer (R1) is externally adjustable to set the bias voltage at a preselected value. Applicant acknowledges that the use of a potentiometer to set a particular voltage is well known in the prior art. However, the context and combination claimed in claim 12, which depends on claim 10, is deemed by the applicant to be novel in view of the overall power supply assembly. The allowability of claim 12 is respectfully requested.

SUMMARY

In the art of electrostatic and electrolytic loudspeakers there is a need to operate these loudspeakers at low volume levels or have near instant startup with material that has a large signal dynamic range to prevent fading out at low levels. Fading out occurs when the bias circuit doesn't maintain the bias voltage, thereby causing a loss in the output level. The applicant's bias circuit has been designed to take advantage of newer AC inverters that have lower input operating voltage requirements and to minimize voltage drops normally found in linear regulators by designing an all discrete parts regulator.

There are two main problems with typical voltage regulators as are found in the prior art. The first problem is that they have a limited input voltage range, typically about 40 VDC. This problem is solved by the instant invention by using discrete parts with a voltage rating of 100 VDC or greater. The second problem is that the typical linear regulator has a minimum voltage drop of greater than 1.5 VDC. This problem is solved by the instant invention with a custom design that minimizes low input voltage losses.

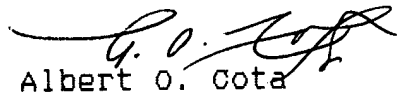
The overall goal of the applicant's power supply assembly is to get the AC inverter powered up and running as soon as possible on a minimum voltage. The disclosed circuit operates the AC inverter on 2.5 VDC with a maximum of 0.2 VDC of drop across the regulator.

In view of the above amendments it is deemed that the Examiner's objections and rejections have been

overcome. Therefore, the applicant respectfully requests the allowance of claims 1, 2, 4, 6, 8, 10, 12, 15, 17, 18 and 20 at an early date.

No fee is deemed necessary at this time.

Respectfully submitted,



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